

**PARAPOLYDORA (ASTERACEAE),
A NEW GENUS OF VERNONIEAE FROM SOUTH AFRICA**

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ABSTRACT

The genus *Parapolydora* is newly described for the African species previously known as *Vernonia fastigiata*, differing from *Polydora* primarily by its perennial habit, achenes with numerous idioblasts, individual setulae uniseriate from near the base, and with pollen sublophate rather than lophate.

KEY WORDS: Asteraceae, Vernonieae, *Parapolydora*, new genus, Africa.

The study of the paleotropical Vernonieae by Robinson (1999b) was the most complete review of the Vernonieae of the Paleotropical region since the more accurate delimitation of the genus *Vernonia* (Robinson 1999a). It was an effort to provide more appropriate generic names for many of the most common Vernonieae in the paleotropical region for the treatment in *The Families and Genera of Vascular Plants* edited by K. Kubitzki (in press). Time and herbarium resources were limited, and the result was, of necessity, incomplete. It was clear at the time that additional studies would be required for the many remaining unplaced species.

The present addition involves the placement of one species, *Vernonia fastigiata* Oliver & Hiern that has appeared in the last few years in collections and as a DNA voucher. The species clearly falls into the group treated as the subtribe Erlangeinae by Robinson (1999b). However, the species differs in important characteristics from every

genus presently recognized in the Erlangeinae. Of the nearly 30 known genera in the Erlangeinae, only 3 show a combination of stem pubescence, leaf insertion and form, corolla and pappus structure, and raphid shape that agree with those of *V. fastigiata*. All 3 of these genera are in the African subgroup of the Erlangeinae that has a glaucolide/hirsutanolide rather than a 5-methylcoumarin secondary metabolite chemistry (Herz 1996). These genera are *Hilliardiella* H. Rob., *Polydora* Fenzl., and *Vernoniastrum* H. Rob.

During the 1999 study, relationship of *Vernonia fastigiata* to *Hilliardiella* was initially suspected because of the non-lophate pollen. However, *Hilliardiella* differs by the canescent pubescence of symmetrically T-shaped hairs on the stems, leaf undersurfaces, peduncles, involucre bracts, and corollas. The presence of the T-shaped hairs on the corollas is particularly distinctive. In addition, *Hilliardiella* has only 12-20 florets in the heads, and the involucre bracts lack tomentum and lack abruptly constricted and reflexed awns.

Presently, *Vernonia fastigiata* is considered much more similar and presumably more closely related to two other members of the same group of Erlangeinae, *Polydora* and *Vernoniastrum*, both of which differ from *V. fastigiata* by having lophate, triporate pollen. *Vernonia fastigiata* also differs from both the related genera in the setulae of the achenes which lose their biseriolate condition near the base and have a single, long cell, rarely one long and one shorter cell, for most of their length. In *Polydora* and in the *Vernoniastrum* species that have setulae, the biseriolate condition almost always continues for most of the setula length. In other respects *V. fastigiata* shows a mixture of *Polydora* and *Vernoniastrum* characteristics, and one species of *Polydora*, *P. angustifolia* (Steetz in Peters) H. Rob., has a smaller but very similar-looking involucre with tomentum and long awns. *Vernonia fastigiata* is consistently cited as a perennial, while species of *Polydora* are mostly annuals. The hairs in *V. fastigiata* include some that are L-shaped (one-armed T-shaped) as in *Polydora*, but the hairs in the latter are larger and not hidden among simple multiseptate hairs and coarser stout-based hairs. The corolla lobes of *V. fastigiata* are without hairs, and the anther bases are not tailed, both being characteristics of

	<i>Parapolydora</i>	<i>Hilliardiella</i>	<i>Polydora</i>	<i>Vernoniastrum</i>
pollen	sublophate- Type A	sublophate- Type A	lophate- triporate	lophate-triporate
corolla	no hairs	T-shaped hairs	few biseriate or none	lobes pilose distally
stem	L-shaped and simple	T-shaped hairs	L-shaped	pilose
achenes	many idioblasts	many idioblasts	few idioblasts	many idioblasts
setulae	mostly uniseriate	biseriate	biseriate	biseriate
perennial	yes	yes	mostly annual	yes
raphids	elongate	elongate	elongate	elongate
heads	45-50 florets	12-20 florets	ca. 30 florets	ca. 50 florets
thecae	no tails	tails short of none	no tails	short tails

Table 1. Character comparison of *Parapolydora* and the related genera *Hilliardiella*, *Polydora*, and *Vernoniastrum*.

Polydora and unlike *Vernoniastrum*. The achene walls have few or no glands, and have numerous idioblasts throughout, more like *Vernoniastrum* but unlike *Polydora*. The ca. 50 florets in the heads of *V. fastigiata* are matched in some *Vernoniastrum*, but *Polydora* is known to have as many as 30. The chromosome numbers of the perennial genera *Hilliardiella* and *Vernoniastrum* are $n = 10$, and the annual *Polydora* is $n = 9$ (Jones 1979, 1982). The chromosome number of *V. fastigiata* is as yet unknown, but should be $n = 9$ or 10 or a polyploid of 9 or 10.

The characteristics of the four genera are compared in Table 1.

In view of the number of similarities between *Vernonia fastigiata* and *Polydora*, the new genus is here named *Parapolydora*.

Parapolydora H. Rob., **gen. nov.** Type: *Vernonia fastigiata* Oliver & Hiern.

Plantae herbaceae perennes; pilis variabilis interdum scabridis et base crassis vel uniseriate multiseptatis vel asymmetricice L-formibus. Rami inflorescentiae in capitulis longe pedunculatis terminati, bracteis involucri base tomentosis distaliter abrupte reflexe glabrate aristatis; flores ca. 50 in capitulo; thecae antherarum non caudatae; basi stylosum nodati; rami stylosum in pilis acicularibus obsiti; achaenia 8-10-nervata, idioblastis numerosis, setulis elongatis fere ad basim sensim uniseriatis, raphidis elongatis; pappus biseriatus, setis interioribus capillaribus distaliter non latioribus. Grana pollinis sublophata tricolporata echinata.

Perennial herbs 0.2-1.0 m tall; from slender prostrate or creeping stem or rhizome, erect stems with few to many ascending branches, 5-angled, scabrid with broad-based hairs on angles, sides with numerous glandular dots, finely and sparsely puberulous with some simple multiseptate hairs, and some one-armed L-shaped hairs with stalk near one end as in *Polydora*. Leaves alternate, linear to narrowly elliptic-lanceolate, venation pinnate with short, ascending, secondary veins weakly prominulous below, surfaces concolorous, glandular dots more numerous below, sparsely puberulous. Inflorescences of long-pedunculate heads terminal on leafy stems and branches; involucre broadly campanulate to subglobose; involucre bracts 110-130 in ca. 6 series, persistent, gradate, from 2 to 12 mm long, bases of bracts oblong, pale, appressed, covered with dense pale tomentum, bracts distally constricted into long glabrous, often reflexed awn, darkened along costa near base of awn; receptacle epaleaceous, alveolate. Florets 45-50 in a head; corollas lavender, without hairs, basal tubes narrowly funnellform, glabrous, throats about as long as linear lobes, few glands on throat and glands clustered at lobe tips; thecae of anthers without tails at base; apical appendages ovate-lanceolate, glabrous, with thin-walled cells; style base with distinct annular node; style

branches with long acicular sweeping hairs. Achenes weakly 8-10-veined, with setulae becoming long and uniseriate from near base, rarely with 1 long cell and 1 short cell, idioblasts numerous from base to top of achene, raphids elongate; pappus white or sordid white, inner series of many barbellate bristles, not broadened at tips, outer series of numerous, short, linear scales. Pollen ca. 50 μm in diam., sublophate (Type A), tricolporate, echinate.

The genus has only the following single species.

Parapolydora fastigiata (Oliver & Hiern) H. Rob., **comb. nov.**, basionym: *Vernonia fastigiata* Oliver & Hiern in Oliver, Fl. Trop. Africa 3: 282 (1877). Specimens seen from Namibia, South Africa (Transvaal), and Zimbabwe.

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